Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method for reducing restriction of blood flow in a lumen of a blood vessel caused by an intraluminal plaque therein, the method comprising:

(a) inserting an imaging guidewire into the lumen of the blood vessel up to the intraluminal plaque without traversing the plaque, said imaging guidewire having a distal tip that includes imaging components capable of generating a cross-sectional image of the lumen, at least a portion of said distal tip having a diameter that is larger than a rest of said guidewire having a smaller diameter;

(b) propelling a catheter over said imaging guidewire towards said intraluminal plaque until said catheter reaches said distal end of said guidewire, said catheter having a working head located at a distal tip of said catheter, said working head configured for removal of at least a portion of the intraluminal plaque, said catheter and said working head deployed on said imaging guidewire so as to accept passage of said rest of said imaging guidewire having said smaller diameter axially through a central region of said working head and said catheter as said catheter is propelled towards said intraluminal plaque, and when said catheter reaches said distal tip of said guidewire at least a portion of said imaging components are positioned inside said working head and a portion of said distal tip is the only

element[[s]] of either of said imaging guidewire and said catheter extending in front of said working head;

(c) scanning the lumen with said imaging guidewire to generate said cross-sectional image of the lumen;

(d) positioning said catheter in the lumen by actuating at least one positioning element;

(e) monitoring said cross sectional image to ascertain that said working head is positioned at a desired location with respect to said proximal end of the intraluminal plaque; and

(f) operating said working head to remove at least a portion of the intraluminal plaque.

2. (Original) The method of claim 1, further comprising repetition of (c) through (f).

3. (Previously Presented) The method of claim 2, iteratively repeated until the restriction in the lumen has been reduced to a desired degree.

4. (Previously Presented) The method of claim 3, further comprising advancing the catheter together with said distal tip of said guidewire in the lumen.

5. (Original) The method of claim 4, iteratively repeated until said working head traverses said intraluminal plaque.

6. (Original) The method of claim 1, wherein said intraluminal plaque is of a type selected from the group consisting of a primary atherosclerotic lesion, a lesion caused

by restenosis, a lesion residing at least partially within a previously implanted stent, a lesion situated in close proximity to a bifurcation of the lumen of the blood vessel, a vulnerable plaque and a lesion which totally occludes the lumen of the blood vessel.

7. (Original) The method of claim 1, wherein said working head includes at least one cutting edge which is operative only when said working head moves rotationally.

8. (Original) The method of claim 1, wherein said positioning of said catheter in the lumen is implemented such that said at least one positioning element includes at least one balloon which circumferentially surrounds at least a portion of said catheter.

9. (Original) The method of claim 1, wherein said positioning of said catheter in the lumen is implemented such that said at least one positioning element includes at least one set of at least three balloons in a single cross sectional plane of said catheter.

10. (Original) The method of claim 9, wherein said positioning of said catheter in the lumen is implemented so as to further include at least one additional set of at least three balloons in a single cross sectional plane of said catheter.

11. (Original) The method of claim 1, wherein said inserting, propelling, scanning, positioning, monitoring, operating are subject to control by a single central processing unit (CPU).

12. (Original) The method of claim 11, wherein said single CPU is further subject to input by a physician operator thereof.

13. (Original) The method of claim 1, wherein said operating said working head begins prior to a traverse of the plaque by said working head.

14. (Original) The method of claim 1, wherein said operating of said working head includes rotating said working head at a speed of 1 to 100 RPM.

15. (Original) The method of claim 1, wherein said operating of said working head includes rotating said working head at a speed of 5 to 50 RPM.

16. (Currently Amended) A system for reducing restriction of flow in a lumen of a blood vessel caused by an intraluminal plaque therein, the system comprising:

a) an imaging guidewire insertable in the lumen of the blood vessel up to the intraluminal plaque without traversing the plaque, said imaging guidewire having a distal tip that includes imaging components capable of generating digital data which describe a cross-sectional image of the lumen and communicating said digital data to a central processing unit (CPU) and further capable of guiding a catheter to the intraluminal plaque without traversing the plaque, at least a portion of said distal tip having a diameter that is larger than a rest of said guidewire having a smaller diameter;

(b) a catheter including a working head located at a distal tip of said catheter, said working head designed and constructed to remove at least a portion of the intraluminal plaque, said working head deployed on said imaging guidewire so as to accept passage of said rest of said imaging guidewire having said smaller diameter axially through a central region of said working

head and said catheter as said catheter is propelled towards said intraluminal plaque until said catheter reaches a distal tip of said guidewire such that at least a portion of said imaging components are positioned inside said working head and a portion of said distal tip is the only element[[s]] of either of said imaging guidewire and said catheter extending in front of said working head;

(c) at least one positioning element integrally formed with, or attached to, said catheter, said at least one positioning element designed and constructed to position said working head within the lumen of the blood vessel;

(d) a CPU designed and configured to:

(i) accept input from a physician;

(ii) to receive said digital data which describe said cross-sectional image of the lumen and transform said digital data into said cross-sectional image displayable upon a display device;

(iii) operate actuators which control components of the system; and

(iv) control operation of said positioning element by means of at least one of said actuators; and

(e) one or more actuators, subject to control by said CPU and including:

(i) at least one positioning element actuator responsible for the control of said at least one positioning device.

17. (Previously Presented) The system of claim 16, wherein said CPU is further designed and configured to perform at least one action selected from the group consisting of:

(i) to rotate said guidewire within said catheter by means of said actuators; and

(ii) control operation of said working head.

18. (Original) The system of claim 16, wherein said CPU further includes at least one item selected from the group consisting of a display device and a data input device.

19. (Previously Presented) The system of claim 16, wherein said actuators further includes at least one additional actuator designed and constructed to perform at least one action selected from the group consisting of:

(i) longitudinally reciprocate and rotate said working head;

(ii) advance said catheter within the lumen;

(iii) rotate said guidewire within said catheter; wherein said actuators are subject to control of said CPU.

20. (Previously Presented) The system of claim 16, wherein said working head is configured to operate intermittently as said catheter traverses said intraluminal plaque.

21. (Original) The system of claim 16, wherein said working head includes at least one cutting edge which is operative only when said working head moves rotationally.

22. (Original) The system of claim 16, wherein said at least one positioning element includes at least one balloon which circumferentially surrounds at least a portion of said catheter.

23. (Original) The system of claim 16, wherein said at least one positioning element includes at least one set of at least three balloons in a single cross sectional plane of said catheter.

24. (Original) The system of claim 23, further including at least one additional set of at least three balloons in a single cross sectional plane of said catheter.

25. (Previously Presented) The system of claim 16, wherein said working head is configured such that operation of said working head begins prior to a traverse of the plaque by said working head.

26. (Original) The system of claim 16, wherein operation of said working head includes rotating said working head at a speed of 1 to 100 RPM.

27. (Original) The system of claim 16, wherein operation of said working head includes rotating said working head at a speed of 5 to 50 RPM.

28. (Currently Amended) The system of claim 16, wherein said imaging guidewire further includes a ~~folding mirror~~ imaging sensor and wherein said catheter is positionable upon said guidewire so that only said imaging sensor protrudes from said working head in a direction facing the plaque.

29. (Original) The system of claim 16, wherein an Archimedes screw is further incorporated into the design of said imaging guidewire in order to facilitate removal of at least a portion of the plaque.

30. (Original) The system of claim 16, wherein said catheter includes at least one therapeutic lumen.

31. (Original) The system of claim 16, wherein said catheter includes a central vacuum lumen.

32. (Previously Presented) The system of claim 16, wherein said catheter and said guidewire are configured to cross the lesion together by advancing said catheter together with said distal tip of said guidewire in the lumen.

33. (New) A system for reducing restriction of flow in a lumen of a blood vessel caused by an intraluminal plaque therein, the system comprising:

(a) an imaging guidewire insertable in the lumen of the blood vessel, said imaging guidewire has a distal tip that includes at least an imaging sensor and at least a portion of said distal tip has a diameter that is larger than a rest of said guidewire having a smaller diameter, said imaging guidewire capable of generating digital data which describe a cross-sectional image of the lumen and communicating said digital data to a central processing unit (CPU) and further capable of guiding a catheter to the intraluminal plaque without traversing the plaque;

(b) said catheter includes a working head, said working head deployed on said imaging guidewire so as to accept passage of said rest of said imaging guidewire having said smaller diameter axially through a central region of said working head and said catheter as said catheter is propelled over said imaging guidewire

until said working head reaches said distal tip, said working head designed and constructed to remove at least a portion of the intraluminal plaque; and

(c) at least one positioning element integrally formed with, or attached to, said catheter, said at least one positioning element designed and constructed to radially position said working head within the lumen of the blood vessel.

34. (New) An imaging guidewire insertable in the lumen of the blood vessel, the imaging guidewire comprising: a distal tip that includes at least an imaging sensor, at least a portion of said distal tip having a diameter that is larger than a rest of the guidewire having a smaller diameter, said imaging guidewire capable of generating digital data which describe a cross-sectional image of the lumen and communicating said digital data to a central processing unit.

35. (New) The system of claim 34, wherein said at least a portion of said distal tip that is larger than the rest of the guidewire is a preformed curved tip.

36. (New) The system of claim 34, wherein said at least a portion of said distal tip that is larger than the rest of the guidewire is a ring that is fixed to distal end of imaging guidewire.

37. (New) The system of claim 34, wherein said at least a portion of said distal tip has a diameter of upto 800 microns, while the rest of the guidewire has a diameter of upto 350 microns.